

LA-UR-21-27562

Approved for public release; distribution is unlimited.

Title: Discovering New Biodegradable Plastics

Author(s): Dumont, Joseph Henry

Intended for: DisrupTECH presentation

Issued: 2021-07-30

Disclaimer:

Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by Triad National Security, LLC for the National Nuclear Security Administration of U.S. Department of Energy under contract 89233218CNA000001. By approving this article, the publisher recognizes that the U.S. Government retains nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

Discovering New Biodegradable Plastics

Joseph H. Dumont

July 29th 2021

What we are solving:

Problem: Single use conventional plastics are extremely durable, rarely recycled and a source of pollution in nature

Our solution: We help discover new biodegradable plastics to replace the highly polluting ones!



Conventional vs. Bioplastics

1970

Since

2007

Low

Cost

High

High

Performance

Low

From crude oil

Production

From waste

No

Biodegradability

Yes



Market and trends

\$120.5 B

2019 F & B packaging market

SINGLE USE PLASTIC FOOD PACKAGING MATERIALS

- High-density polyethylene
- Low-density polyethylene
- Polypropylene

CONSUMER TRENDS



On-the-go
Ready-to-eat
Frozen foods

BIOPLASTICS



PLA is the leader in the biodegradable plastics market.

PHAs and other blends are growing.



Our solution: PolyHydroxyAlkanoates (PHAs)

PE, PS, PP etc.



PHA
bioplastics

Objective: apply data analytics to create better bioplastics that can meet or exceed the properties of conventional plastics



How we do it

Experimental
data



Literature
values



Customer
input



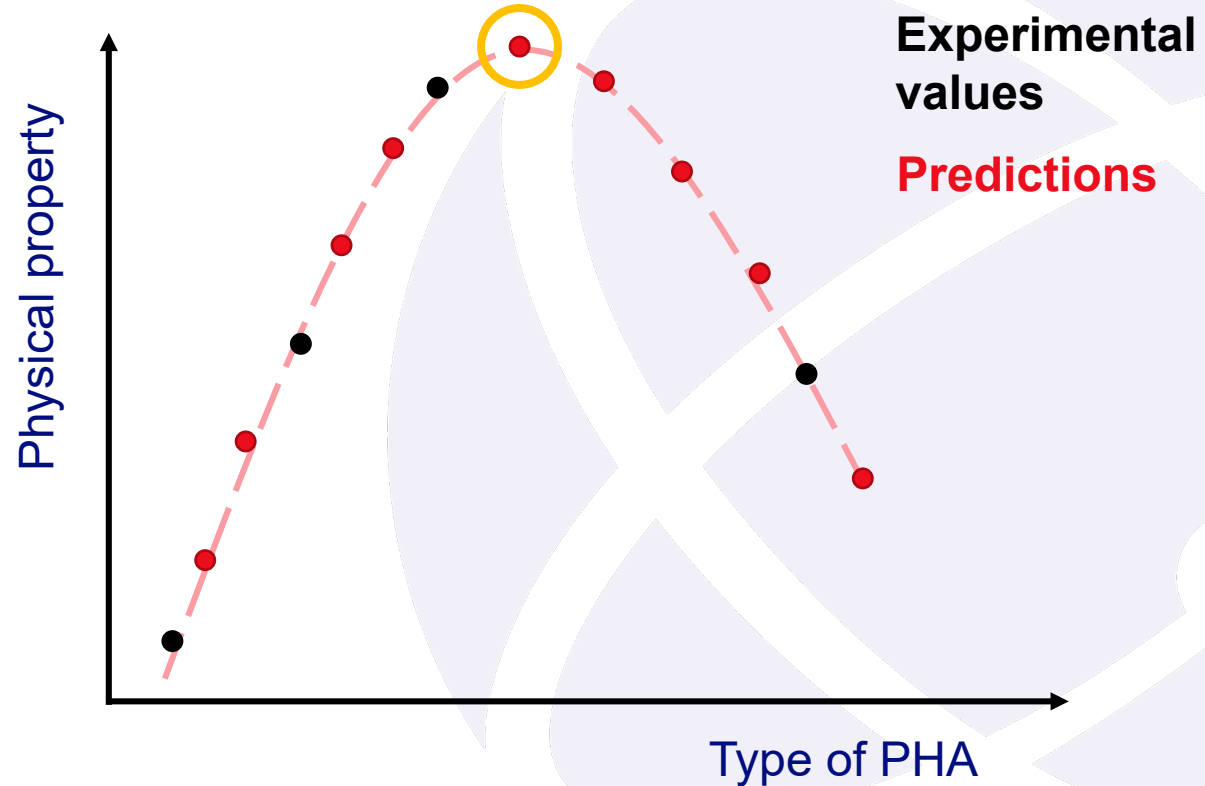
New
bioplastic
materials



Applying the technology to your needs



**Helps you select
the best option**



Value Proposition

Advanced AI/ML tool enables the development of the right material 10x faster than conventional R&D, allowing companies to increase speed to market and saving over 75% in development costs.

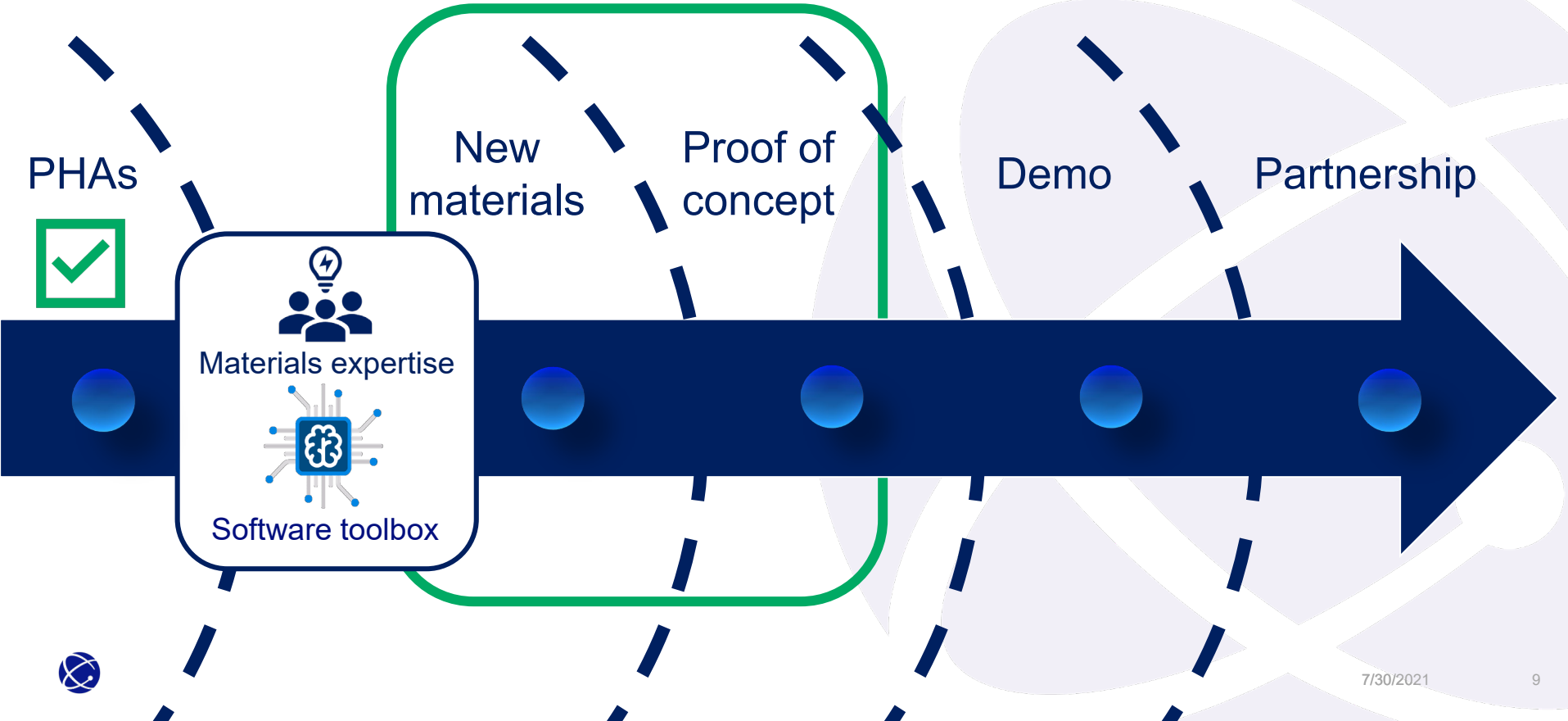
~\$1M saved / year !

Format: Service to compounders and industrial R&D teams

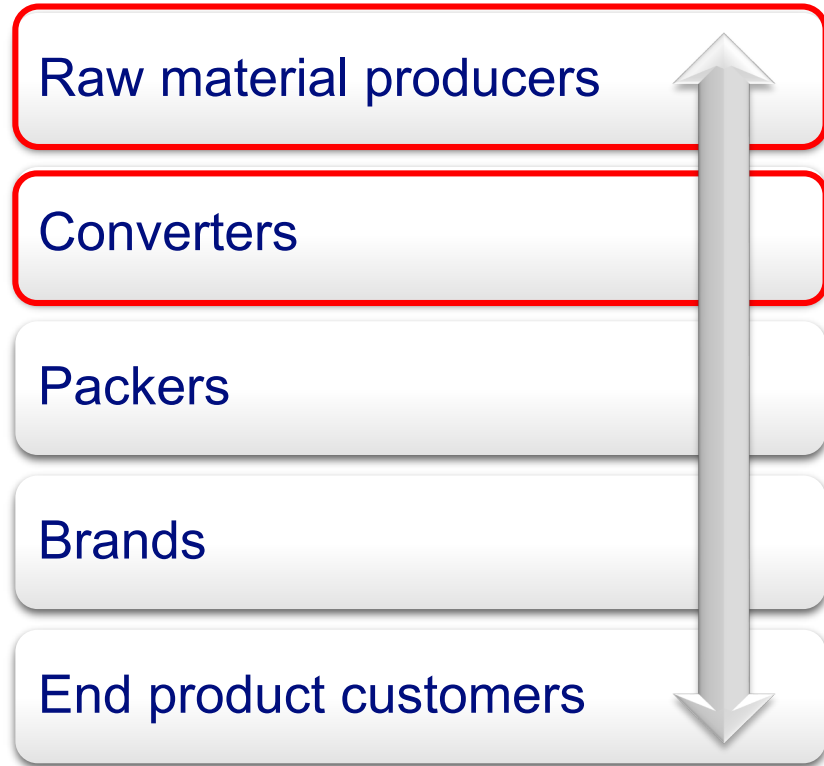


The next steps

A partner!



With whom?



People who care
about materials!



Why LANL?

- We have a proud history of advancing the science of materials.
- Solving national security challenges through scientific excellence.
- Using our unique capabilities to solve the current problems around plastic pollution.



How to get in touch?

We are motivated in making a difference for a brighter, greener future.

For more information:

Joseph H. Dumont (joseph.dumont@lanl.gov)

Amy Migliori (amymigliori@lanl.gov)



Thank you

